

Appln. No.: 09/992,869
Amendment Dated November 22, 2006
Reply to Office Action of August 25, 2006

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Remarks/Arguments:

Claims 1, 2, 7 and 8 have been amended. No new matter is introduced herein. Claims 1-30 are pending.

Claims 1, 2, 7 and 8 have been amended to recite that the area light source includes features which scatter light from the LED device to provide substantially uniform illumination by each of the red-, green-, and blue- LED chips over an area that includes at least one frame of the light-transmission original. Support for the amendment can be found, for example, at page 13, lines 9-15 and at page 16, lines 5-14.

Applicants' Attorney thanks the Examiner for the telephone interview on September 28, 2006. During the course of the interview, Applicants representative discussed the objection of claims 1-11 under 35 U.S.C. §112, second paragraph. The Examiner clarified that claims 1-11 are rejected because claims 1, 2, 7 and 8 are missing essential elements of the invention.

Claims 1-11 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. As discussed above, the Examiner asserts that claims 1, 2, 7 and 8 are missing essential element of the invention. Claims 1, 2, 7 and 8 have been amended to recite that the area light source includes features which scatter light from the LED device to provide substantially uniform illumination by each of the red-, green-, and blue- LED chips over an area that includes at least one frame of the light-transmission original. Accordingly, Applicants respectfully request that the objection of claims 1-11 under 35 U.S.C. §112, second paragraph be withdrawn.

Claims 1-11 were rejected under 35 U.S.C. §103(a) as being unpatentable over Voser et al. (U.S. Pat. No. 6,172,745) in view of Nagata et al. (U.S. Pat. No. 6,239,421). It is respectfully submitted, however, that this ground for rejection is now overcome for the reasons set forth below.

In particular, neither Voser et al. nor Nagata et al. disclose or suggest:

the area light source includes features which scatter light from the LED device to provide substantially uniform illumination by each of the red-, green-, and blue- LED chips over an area that includes at least one frame of the light-transmission original...

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as recited in claims 1, 2, 7 and 8.

Voser et al. disclose, in Fig. 1, an optical sensing module 4 including unitary light guides 16 and 18 for directing light produced by source arrays 8 and 10 onto a strip of a banknote 2 (Col. 4, lines 60-64 and Col. 5, lines 6-10). Voser et al. do not disclose or suggest an area light source and thus can not disclose that an area light source irradiates a light-transmission original substantially uniformly, as recited in claim 1. Voser et al., instead, illuminate a portion (strip) of banknote 2. Thus, even if an area of the banknote is illuminated, the light is not transmitted through the bank note nor is an area that includes the entire banknote illuminated substantially uniformly over an area that includes at least one light transmission original. Furthermore, although Voser et al. disclose that the source arrays include red, green and blue LEDs (Column 5, lines 43-67), Voser et al. do not disclose or suggest that red, green and blue LEDs are activated sequentially. Thus, Voser et al. do not include all the features of claim 1.

Nagata et al. disclose, in Fig. 4, a contact type image sensor including an illumination device 11. Nagata et al. further disclose that an original image held against the cover glass 5 by a roller is sequentially illuminated by red, green, and blue light by the illumination device 11 (Col. 8, lines 63-67). Nagata et al. do not disclose or suggest an area light source and thus can not disclose that an area light source irradiates light to a light-transmission original, as recited by claim 1. Nagata et al. further do not disclose or suggest that an area light source provides substantially uniform illumination over an area that includes at least one frame of the light-transmission original, as recited by claim 1. Nagata et al., instead, illuminate only a portion of a light-reflecting original which is sensed by a linear image sensor. Thus, Nagata et al. does not include all of the features of claim 1.

Because Voser et al. and Nagata et al. either alone or in combination do not disclose all of the features of claim 1, claim 1 is not subject to rejection under 35 U.S.C. 103(a) as being unpatentable over Voser et al. in view of Nagata et al.

Amended claims 2, 7 and 8, although not identical to claim 1, include features similar to claim 1 that are neither disclosed nor suggested by the cited art. Namely, an area light source for radiating light to a light-transmission original where the area light source includes features which scatter light from the LED device to provide substantially uniform illumination by each of the red-, green-, and blue- LED chips over an area that includes at least one frame of the light-

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transmission original. As discussed above, Voser et al. and Nagata et al., either alone or in combination, do not disclose these features. Accordingly, claims 2, 7 and 8, and claims 3-6 and 11 which depend from claim 2, as well as claims 9 and 10 which depend from claim 7 or 8 are not subject to rejection under 35 U.S.C. §103(a) as being unpatentable over Voser et al. in view of Nagata et al.

Although it is not explicitly stated in the Office Action, it appears that claims 9 and 10 which depend from claims 7 or 8, are rejected under 35 U.S.C. §103(a) as being obvious in view of Voser et al., Nagata et al. and Ishikawa (U.S. Pat. No. 5,921,651). Claims 9 and 10, however, include all of the features of claim 7 or 8 from which they depend and are patentable over Voser et al. and Nagata et al. for at least the same reasons as claim 7 and 8.

Ishikawa relates to a surface light source that uses a light guide plate 2 which is illuminated by a linear lamp 1 on one side of the light guide plate. Ishikawa does not disclose or suggest how the device would operate with Red, Green and Blue LED light sources instead of the linear light sources. Because the Ishikawa disclose that the layout of the light diffusing elements depends on the evenness of the illumination provided by the lamp (see col. 6, lines 59-67), one of ordinary skill in the art could not use the disclosure of the Ishikawa patent to provide an area light source that would work with light-emitting diodes and still produces a uniform illumination by each of the red, green and blue LED chips over an area that includes at least one frame of the light transmission original. Furthermore, even if Ishikawa did sufficiently disclose only a surface light source that would work with LED's, it does not disclose using the light source to transmit light through a light-transmission original. Finally, because Ishikawa concerns an area light source while Voser et al. and Nagata et al. concern linear light sources, the only suggestion to combine Ishikawa et al with Voser et al. and Nagata et al impermissibly comes from applicant's own disclosure. It is improper to use Applicant's disclosure against them in this manner. Thus, Ishikawa does not supply the deficiencies of Voser et al. or Nagata et al. as the combination does not disclose or suggest a light source in which at least one LED device including red, green and blue-LED chips is arranged to a peripheral side thereof, wherein the area light source includes features which scatter light from the LED device to provide substantially uniform illumination by each of the red, green and blue LED chips over an area that includes at least one frame of the light transmission original, in a manner that would enable a skilled person to practice the invention. Because the area light source of Ishikawa is a lamp, Ishikawa can not disclose the features of providing a substantially uniform red, green,

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and blue illumination when the illumination source is an LED, as recited in claims 7 and 8. Accordingly, claims 9 and 10, which depend from claims 7 and 8, are not subject to rejection from the 35 U.S.C. §103(a) as being unpatentable over Voser et al. in view of Nagata et al. and Ishikawa.

Claim 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over Voser et al. in view of Yamamoto (U.S. Pat. No. 6,084,983). Claim 11, however, includes all of the features of claim 2 from which it depends and is patentable over Voser et al. for at least the same reasons as claim 2.

Yamamoto discloses, in Fig. 2, an image reading device that includes a line light source 20 which employs LEDs 21R, 21G and 21B along its length (Col. 4, lines 18-34). Yamamoto is silent regarding an area light source that irradiates light to a light-transmission original. Thus, Yamamoto can not make up for the deficiencies of Voser et al. Namely, an area light source that scatters light from the LED device to provide a substantially uniform red, green, and blue illumination over an area that includes at least one frame of the light-transmission original, as recited in claim 2. In addition, although Yamamoto discloses a correction routine (Col. 4, line 53-Col. 5, line 35 and Fig. 3), the correction routine is performed, however, for the line light source 20, not for an area light source. Thus, Yamamoto does not include all of the features in claim 2. Accordingly, claim 11 is not subject to rejection under 35 U.S.C. §103(a) as being unpatentable over Voser et al. in view of Yamamoto.

Applicants appreciate the indication in the Office Action that claims 12-30 are objected to as being dependent from a rejected base claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, there is no need to amend these claims because they are dependent on claims which are in condition for allowance for the reasons noted above.

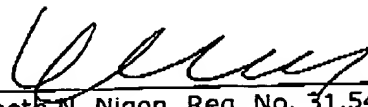
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In view of the foregoing amendments and remarks, Applicants request that the Examiner reconsider and withdraw the rejection of claims 1-11 and the objection to claims 12-30.

Respectfully submitted,


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KNN/drm/pb

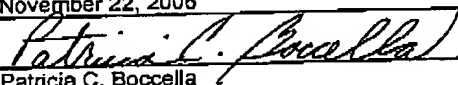
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I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office (571-273-8300) on the date shown below.

November 22, 2006


Patricia C. Boccella

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